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Maritime Patrol Aircraft in MOOTW: Battlespace Awareness for the Operational Commander

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Joint Military Operations Department.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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MANAGING RISK AND SYNCHRONIZATION OF MILITARY AND CIVILIAN HUMANITARIAN/RELIEF ORGANIZATION EFFORTS IN HIS THEATER REQUIRES THE JFC TO ACHIEVE A NEAR-OMNISCIENT *BATTLESPACE AWARENESS*. BUT, THE CINC/JFC HAVE A REAL DILEMMA. MOST IMAGERY ASSETS ARE DEDICATED TO NATIONAL-STRATEGIC SUPPORT, NOT TO THE OPERATIONAL LEVEL WHERE THE JFC CONDUCTS HIS *ART*. IS THERE AN ASSET THAT MEETS THE JFCS NEED? THE ANSWER IS *YES...MPA*.

THE *MARITIME PATROL AIRCRAFT (MPA)* (P-3 "ORION"), IS A PROVEN MARITIME PERFORMER THAT WAS MODIFIED IN SUPPORT OF A CINC TO FILL HIS NEEDS FOR REAL-TIME, FLEXIBLE, IMAGERY IN MOOTW. ITS STAND-OFF WEAPONRY AND IMAGERY SYSTEM ENHANCEMENTS MAKE THIS COLD WAR WORKHORSE A LITTORAL/OVERLAND, PRECISION FORCE MULTIPLIER FOR THE JFC ENGAGING IN MOOTW. ITS *DWELL TIME* OVER TARGET, DYNAMIC ABILITY TO BE RETASKED IN-FLIGHT, ROBUST IMAGERY DOWNLINKING CAPABILITY, AND ABILITY TO GET UNDER THE WEATHER TO ACHIEVE OPTIMAL LOOK ANGLES ALL COMBINE TO PROVIDE TODAY'S JFC WITH THE TOOL HE NEEDS TO ACHIEVE *BATTLESPACE AWARENESS* IN MOOTW AND, THUS, RAISE THIS NEW OPERATIONAL ART TO A HIGHER FORM.

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ABSTRACT

Traditional warfare between large armies and navies are perhaps a thing of the past. The *battles* that the new joint doctrine envisions, fall within a broad spectrum of warfare classed as *military operations other than war*, or MOOTW. The "clash of cultures," democratic political stability, environmental and human crises, and terrorism are among the new enemies that the Joint Force Commander (JFC) will have to decisively defeat. The expansive desert and ocean battlespace was *then*. Battlespace that is mountainous, urban, and deep within the continents is *now*. Where once we fought a danger that was "clear and present," the new and present dangers are anything but clear.

Managing risk and synchronization of military and civilian humanitarian/relief organization efforts in his theater requires the JFC to achieve a near-omniscient *battlespace awareness*. But, the CINC/JFC have a real dilemma. Most imagery assets are dedicated to national-strategic support, not to the operational level where the JFC conducts his *art*. Is there an asset that meets the JFCs need? The answer is *yes...MPA*.

The *maritime patrol aircraft (MPA)* (P-3 "Orion"), is a proven maritime performer that was modified in support of a CINC to fill his needs for real-time, flexible, imagery in MOOTW. Its stand-off weaponry and imagery system enhancements make this Cold War workhorse a littoral/overland, precision force multiplier for the JFC engaging in MOOTW. Its *dwell time* over target, dynamic ability to be retasked in-flight, robust imagery downlinking capability, and ability to get under the weather to achieve optimal look angles all combine to provide today's JFC with the tool he needs to achieve *battlespace awareness* in MOOTW and, thus, raise this new operational art to a higher form.

ABBREVIATIONS

AIP	Anti-Surface Warfare (ASUW) Improvement Program
AOR	area of responsibility
ARG	Amphibious Ready Group
ASUW	anti-surface warfare
ASW	anti-submarine warfare
BDA	battle damage assessment
C2W	command and control warfare
C4I	command, control, communications, computers and intelligence
CAOC	Combined Air Operations Center
CBU	cluster bomb unit
CCC	command, control, and communications
CDU	Counter-Drug Upgrade
CINC	Commander-in-Chief
CV	aircraft carrier
CVBG	carrier battlegroup
DEA	Drug Enforcement Agency
DoD	Department of Defense
EO	electro-optic/optics/optical
EUCOM	European Command
FON	Freedom of Navigation
GP	general purpose
GPS	Global Positioning Satellite
GSE	general support equipment
HA	humanitarian affairs
HF	high frequency
ID	identification
IMINT	imagery intelligence
I&W	indications and warnings
INT	intelligence
IRDS	Infrared Detection Set
ISAR	Inverse Synthetic Aperture Radar
ISR	intelligence, surveillance, and reconnaissance
JFC	joint force commander
JTF	Joint Task Force
Kts	knots (nautical miles per hour)
LOS	line of sight
MEF	marine expeditionary force
MEU	marine expeditionary unit

MIO	maritime interdiction/interception operations
MIW	mine warfare
MK	mark
MOOTW	military operations other than war
MPA	maritime patrol aircraft
MSCA	military support to civil authorities
NATO	North Atlantic Treaty Organization
NEO	noncombatant evacuation operations
NMS	National Military Strategy
NSS	National Security Strategy
PKO	peacekeeping operations
PO	peace operations
POE	Planned Operating Environment
ROC	Required Operational Capabilities
RSP	recognized surface picture
RSTA	reconnaissance, surveillance, and target acquisition
SAM	surface-to-air missile
SAR	synthetic aperture radar
SATCOM	satellite communications
SEAL	Sea, Air, and Land naval forces
SIGINT	signals intelligence
SLAM	standoff land attack missile
SOF	special operations force
SNFM	Standing Naval Forces, Mediterranean
SSM	surface-to-surface missile
SUW	surface warfare
TACAIR	tactical air/aviation
TARPS	tactical air reconnaissance pod
TEL	transportable erector launcher
TMD	theater missile defense
TRAP	Tactical Receive Applications
TRE	Tactical Receive Equipment
UAV	unmanned aerial vehicle
UHF	ultra-high frequency
UN	United Nations
USW	undersea warfare
VHF	very high frequency
VP	fixed-wing, patrol aviation squadron
VPU	fixed-wing, patrol aviation special projects unit
VQ	fixed-wing, electronic reconnaissance squadron
WEU	Western European Union
ZOS	zone of separation

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APPENDIX

CHAPTER I: INTRODUCTION

The challenges faced by the United States (U.S.) and its military forces have never been greater than they are today. President Clinton's 1996 National Security Strategy (NSS) states that the "...dangers we face today are more diverse." [1] "Engagement and enlargement" [2] means that we are no longer in the business of *containment*, but rather, are committed to the protection of blossoming market economies and democracies worldwide. The NSS makes clear that the safety and security of our allies and emerging democracies worldwide *is* in our national interest and serves to accentuate that the realm of future battlefields is truly unbounded.

Traditional warfare between large armies and navies are arguably a thing of the past. The battles that the new joint doctrine envisions, fall within a broad spectrum of warfare classed as *military operations other than war*, abbreviated as MOOTW (pronounced: *moot - wah*).[3] The "clash of civilizations"[4] or cultures, democratic political stability, environmental and human crises, and terrorism are among the new enemies that the joint force commander (JFC) will have to decisively defeat. Where once we fought a danger that was *clear and present*, the new and present dangers are anything but clear.

Military Operations Other Than War (MOOTW)

The expansive desert and ocean battlespace was *then*. Battlespace that is mountainous, foliage dense, urban, within a nation's territorial waters, or lies deep within the world's continents is *now*. MOOTW encompasses the wide range of conflict, short of war. (Appendix A provides a listing.) It focuses on "...deterring war, resolving conflict, promoting peace, and supporting civil authorities. MOOTW may involve elements of both

combat and noncombat operations...,"[5] simultaneously. It is inherently political and subject to continuous national/international scrutiny and criticism. Done smartly, however, the nation and its leaders believe that MOOTW has the potential to deter or reduce larger scale conflicts, or war itself.

The responsibility for success falls squarely on the shoulders of the Theater Commander-in-Chief (CINC) and the JFC. For the JFC, the demands are great and the potential pitfalls are many. Each MOOTW will be different from others that went before. In all likelihood, MOOTWs will emerge as unexpected crises and response *timing* will be the driving factor. As such, *force* structure options will be limited. Regardless, the nation expects its military to fight and win, decisively. They can accept, but have a low tolerance for, casualties. When force is needed, the success of DESERT STORM has conditioned our nation, and others, to expect that U.S. JFCs will be near-omniscient and will employ the highest technology to achieve *battlespace dominance* and *precision engagement*, thereby minimizing casualties, especially those of noncombatants.

"Battlespace Dominance/Awareness"

> ***Precision engagement will consist of a system of systems*** [author's emphasis] *that enables our forces to locate the objective or target, provide responsive command and control, generate the desired effect, assess our level of success, and retain flexibility to reengage with precision when required. Even from extended ranges, precision engagement will allow us to shape the battlespace, enhancing the protection of our forces.* [6] *(- Joint Vision 2010)*

Admiral William Owens, in his article The Emerging System of Systems, argues that *battlespace dominance* is reliant on the synergistic effects of: (1) achieving *precision force,* (2) leveraging *advanced command, control, communications, computers, and intelligence (C4I),* and (3) gaining *battlespace awareness.* [7] Admiral Owens goes on to say that

battlespace awareness "...rests on the sensing and reporting technologies and includes both the platforms and sensors" [8] associated with intelligence, surveillance, and reconnaissance (ISR). Advanced C4I, in turn, "...rests on technologies associated with transferring information...." [9] And, lastly, precision force occurs when the JFC transforms this knowledge, or awareness, into action.

This is a tall order for today's JFC who finds that the MOOTW environment challenges our current capabilities. At the operational level, the ISR/C4I toolbox looks a little sparse. This is one of the many tough challenges that will confront a JFC.

The CINC/JFC dilemma

Clearly, today's JFC faces a formidable challenge. Although the *system of systems* will someday provide the answer for the future JFC, it is not here today. This means that the practitioner of the operational art must obtain *off-the-shelf* assets to assemble his own system. That makeshift system will likely look toward a wide array of aerospace options from all services for help. But, the JFC's problem is further compounded as many "...elements of the intelligence system are not under either the operational commander's immediate or indirect control." [10] Therein lies the dilemma. What tool *can* the JFC grab from the toolbox that will best provide the real-time/near-real-time (RT/NRT) imagery requirements that he needs *now* for the emergent *MOOTW du jour*?

Several imagery assets that offer potential include:

- Satellites
- Joint Surveillance and Target Attack Radar System (JSTARS)
- SR-71: BLACKBIRD
- Theater Reconnaissance (TR)-1: U-2
- Unmanned Aerial Vehicle (UAV)
- Tactical Air Reconnaissance Pod System (TARPS)

- Maritime Patrol Aircraft (MPA/P-3) Variants
  - EP-3: ARIES (VQ Squadron)
  - Special Projects P-3: REEF POINT (VPU Squadron)
  - P-3C: ORION (VP Squadron)

CHAPTER II: CONSIDERATION OF OPTIONS

What the Warrior Needs: a fused, real time, true representation of the battlespace – an ability to order, respond and coordinate horizontally and vertically to the degree necessary to prosecute his mission in that battlespace.[11] *(-C4I For The Warrior Vision)*

There is a saying among U.S. Army officers and in the Pentagon that states: in the event of two *major regional contingency* (MRC) requirements actually occurring together…it is best to be in the *first* one. Such is the case when vying for limited national/theater resources. Many of our very best intelligence assets are assigned to national/strategic tasks every day. As such, retasking in support of an operational MOOTW requirement must be balanced against all other competing strategic/operational requirements. The JFC should request what he needs to do the job but he stands his best chance of getting support if the asset is already under the operational control (OPCON) of the CINC. Since this is seldom the case, the JFC will most likely have to build his *system of systems* from those off-the-shelf technologies that *are* within the CINC's domain.

Selecting from among the many ISR assets is the JFC's responsibility.[12] Based upon availability, consideration should be given to: deployment responsiveness, asset ability to be dynamically retasked in flight, security/basing issues, support tail, political sensitivities, and the accuracy, usability, completeness, and speed (real-time/near-real-time (RT/NRT)) of the data provided. Using these measures of effectiveness, a consideration of the foregoing options follows.

Satellites

Intelligence gathering satellites are a highly desired and coveted, nationally controlled asset. However, a lack of operational responsiveness is a long held criticism of the national satellite architecture. Their full-spectral coverage of entire regions, simultaneously, offers planners/analysts at the operational/strategic level a great *snapshot* in time and space. But in MOOTW, there are distinct limitations. Many prospective regions of the world where MOOTW can easily be envisioned are not covered by current system priorities. Where coverage does exist; constraints such as limited passes, fixed orbits/tracks, coupled with mid-to-high altitude weather and terrain obscuration can mean satellite imagery support for the JFC will be *spotty*, at best. Lessons learned from DESERT STORM point out that *days* sometimes elapsed between usable satellite passes. (That has also been the case in Bosnia.) Additional time delays are imposed while CINCSPACE and various intelligence *clearing houses* analyze, review, and disseminate the data.[13] To catch a MOOTW adversary with *the goods* requires the right timing (i.e. being there), something a satellite just has no control over (more likely the enemy will avoid known *pass times*). *Stare time* over the target is not a strong suit of the satellite business and a *snapshot* is past-tense information. Often, it tells the JFC what *was* and not what *is* the situation. The JFC needs *continuous*, *reliable*, and *timely* coverage over the next hill, into the next several villages, and downtown at *the corner of Third and Vine*. He needs it under his control and preferably all day, every day. Always good to have it when you can get it, the current constellation of national satellites are not designed to support the JFC's requirement in MOOTW for long-term, continuous coverage.

JSTARS

The JSTARS aircraft served the nation, and the CINC/JFC, very well in DESERT STORM by providing NRT radar derived intelligence. It is a jointly manned U.S. Air Force (USAF)/U.S. Army (USA) ISR/targeting system. The flat, featureless desert was its playground and it attained a well-deserved reputation, of near mythic proportion, for its contributions to that effort. But most MOOTW will not be large-scale war in wide-open expanses that will lend itself to mechanized or armored forces. The synthetic aperture radars (SAR) utilized by JSTARS to detect mechanized and armored force movements in the desert have very real constraints when employed in the mountainous terrain, jungles, or urban environments where, in all probability, MOOTW fighters are likely to find themselves. The search for imbedded artillery, troops, and migrating refugees takes time, lots of it. Even at its best, basing targeting on a radar-based solution can have its problems and leaves many questions for the JFC unanswered. During a DESERT STORM briefing on hunting SCUD Transportable Erector Launchers (TELs), CINCLANT queried as to what degree of confidence we would give him that a radar target was a SCUD TEL and not a bus load of school children; the point was vividly clear. Do we base a strike decision on SAR information alone? In MOOTW the answer would probably be no. The political damage would be too great. *Eyes on target* and *positive combat ID* are the standard of proof. A tough answer in war…near impossible in MOOTW. JSTARS applications to most MOOTWs are limited.

SR-71

Recently revived, the one-of-a-kind, single position BLACKBIRD is a high altitude, high speed, strategic overflight Cold War warrior employed by the USAF in support of national tasking. The good news is that at times this asset is placed under a theater CINC's OPCON. To get the "big picture" in a non-permissive (or hostile) environment on a clear day, its value is certain. Basing, security, a costly support tail, and political sensitivities make long term use operating from a MOOTW intermediate staging base (ISB), other than its normal overseas operating bases, a real problem for the JFC. Onboard analysis does not occur. The SR-71 must first land and download its data before it can be processed, analyzed, and passed on to the JFC. It cannot be dynamically retasked in flight. Like satellites, it is a *snapshot* provider and can fill in some informational *gaps* when satellites are over the horizon but, even together, the JFC is left with only a time-late bit of the picture.

TR-1

As its name implies, the USAF's Theater Reconnaissance (TR) U-2 aircraft is available and may also be under the OPCON of the CINC. It is a unique, single position, high altitude workhorse that was designed for long-range observation of Cold War threats. Data is collected using imagery intelligence (IMINT) and signals intelligence (SIGINT) pod systems but, like satellites and the SR-71, the data must be downloaded for analysis and dissemination. Under the right circumstances, its long flight endurance and ability to *dwell* in the target area, make it a good asset to image large target packages and record areas of theater activity. Limited numbers, large support costs, and basing option concerns make its

dedicated allocation to an emergent MOOTW unlikely. Special security, political sensitivities, and time to deploy may further restrict its operations and, therefore, its usefulness to the JFC in MOOTW.

UAV

Unmanned Aerial Vehicles (UAVs) offer great promise and someday they will dominate the ISR realm. Being unmanned, they can fly low to high altitudes over hostile areas providing IMINT/SIGINT/VIDEO-INT and their loss does not carry the concerns of losing manned aircraft. That said, their limited numbers and high replacement and operating costs make loss for any reason (hostile fire or control) a potential *show-stopper*. Control is a real constraint for this system. For manned IMINT, target acquisition is achieved by first locating the target by eye, and then by slewing the camera onto the target, all while avoiding terrain…a tricky enough business. For UAV controllers, their view can be likened to looking through a soda straw with little to no general spatial reference[14]…target acquisition and terrain avoidance can be extremely difficult. Mountainous or urban terrain, and weather presents real problems and can impact line-of-sight (LOS) communications control systems, which need to be placed in or near the battlespace. For many types of MOOTW, ISBs may be too far removed (perhaps several countries away, as in the recent Liberian NEO) to afford a usable basing option. Amphibious ships, too, have been basing options but sailing time/distance and naval force availability may preclude an afloat option (also the case in the Liberian extraction phase). Latest systems permit hand-off from LOS to satellite control. The downside is that the bandwidth required to *handle* the UAV demands a devoted satellite channel. In many parts of the world, these satellite support channels would be off

commercial *birds*.[15] The cost of operation can be prohibitive to a JFC. Further, our most capable Tier 2+/3 systems (GLOBAL HAWK, DARK STAR, PREDATOR) are still being evaluated placing their reliable operational employment by JFCs in the offing. Once launched, the ability to change missions in-flight or rove at great distances from the control node can be a limitation for the JFC.

TARPS

The Tactical Airborne Reconnaissance Pod System (TARPS) has been a mainstay for the U.S. Navy's carrier based aviation forces for decades. Like the various pods that the U-2 can employ, TARPS is mounted on fighter (F-14, F/A-18) aircraft and provides a means of obtaining IMINT in hostile environments. Current systems do not provide for onboard analysis or transmission and imagery cannot be processed until landing. (A new system being tested will permit some RT/NRT LOS broadcast capability for TARPS.) CVs have seldom been devoted to *small-scale* MOOTWs and even though a TARPS detachment could be deployed ashore, the political sensitivities to low-flying high performance tactical jet aircraft may send the wrong signal. The platform is optimized for short-duration RSTA applications, such as: amphibious beach prep, close air support (CAS), and against port/harbor/airfield targets where limited target sets or general area photo reconnaissance is required. TARPS is a capability available to the CINC and JFC.

MPA

The U.S. Navy's Maritime Patrol Aircraft (MPA) platform is the P-3 "Orion" which is a land-based commercial airframe (Lockheed Electra) adapted for maritime combatant use. The P-3 is a worldwide *regular* at both improved and unimproved airfields and, therefore,

does not generally carry any special security or basing concerns. Its operational characteristics and weight make it compatible with basing anywhere C-130 size aircraft will be based. Three variants are frequently encountered by joint forces. They include the: EP-3 ARIES, P-3 REEF POINT, and P-3C ORION.

The *EP-3 ARIES* aircraft that is flown by two Navy VQ squadrons (Pacific/Mediterranean based) is a *national asset* with an operational mission. It is normally employed in a high altitude orbit outside the battlespace. In that orbit, its imagery capabilities are not optimized. Standing national/strategic/theater-level requirements obviate the use of this platform for long-term or open-ended MOOTW commitments. Its external antennas mark this aircraft as an obvious collection asset which may be politically sensitive. Its special capabilities require additional security handling.

Special Projects *P-3s ("REEF POINT" (RP))* are flown by two Navy VPU squadrons (Pacific/Atlantic based). Their operational tempo (OPTEMPO) is near continuous so availability can be very limited. RP is among the first assets a CINC requests in any crisis.[16] A national/JCS controlled asset, requests are often approved if the asset is available. As there are only two per coast, "...JCS continues to hold the reins and sets the priorities"[17] for their usage. They are key SIGINT, IMINT, VIDEO-INT assets. When assigned, they are TACON to the JFC and can be dynamically retasked in-flight.

The *P-3 ORION*, flown by "standard" Navy VP squadrons, comprises the lion's share (12 active duty/8 reserve squadrons, split evenly between Pacific/Atlantic) of the MPA navy. Best known as a Cold War "blue water" anti-submarine warfare (ASW) and ISR platform, recent adaptations have given them RT/NRT IMINT/VIDEO-INT capabilities like that of RP.

Along with two prototype aircraft that are permanently deployed to the European theater, the Navy has begun production of two follow-on models of IMINT/VIDEO-INT capable platforms for the JFC toolbox. They include: the Anti-Surface Warfare (ASUW) Improvement Program (AIP) and Counter-Drug Upgrade (CDU) aircraft. (A comparison appears at Appendix B.) IMINT/VIDEO-INT from these aircraft (as in RP) can be provided via SATCOM (for still video/digital camera photography) or PIONEER UAV LOS (for live RT transmission) broadcast. All are night capable, employ the infrared detection systems (IRDS), and can be retasked in-flight. Deployed squadrons are always under the theater CINC's OPCON.

CHAPTER III: ASSESSMENT

As the JFC builds his own *system of systems*, he must consider all the tools in his toolbox. Each platform has something to bring to the table but the problem still remains; most of the assets considered were not designed, or don't receive the priority, to support operational level requirements. Each has strengths and weaknesses (a synopsis of which appears at Appendix C) which must be considered even if employment by the JFC is possible. The *critical vulnerability* of all sub-orbital collection platforms is their requirement for a *nearly*-benign air threat environment, if the risk of loss is to be minimized. Today, the air environment is never *sterile* (i.e. shoulder-launched SAMs pose an ever-present insidious threat), and it does not need to be. Under no-fly/air-superiority conditions (as in most MOOTWs today); ISR/RSTA aircraft can be provided an adequate margin of safety by

remaining above small arms or antiaircraft (AAA) fire (5000 feet), and above/outside fixed SAM sites (variable but known ranges).

The MOOTW *battlespace* can be either very large (as in Bosnia where tens of thousands of square miles are involved) or very small (as in the Liberian NEO where the whole area of interest was confined to the city of only about ten square miles). The JFCs vision and awareness is enhanced if the ISR/RSTA asset is day/night capable, can be dynamically retasked in-flight, and has the endurance and range to cover, with frequent revisitation, the whole domain. His situation is optimized when onboard analysis can occur and the ISR/RSTA/C4I asset is placed directly under his control. RT/NRT imagery gives him the critical *on-demand* battlespace awareness capability necessary to make the civil-military assessments (i.e. adversary disposition, BDA, humanitarian affairs/civil disaster, security, SOF support) that must be made, determine courses of action (combat, non-combat, civil, enemy, and own), and respond to political or media demands.

Clearly, for the operational level commander, the MPA P-3C *Orion*, and its RP variant, most fully meets these demands. RP, if available, possesses the fullest spectrum of intelligence collection capabilities and is a premier ISR/RSTA platform. The VP/P-3C (EO/IRDS equipped) provides similar imagery capabilities but, unlike its RP counterpart, it is also a combatant aircraft whose multi-mission capabilities (to include: undersea and surface warfare, mine laying, and SOF insertion) and burgeoning weapons complement (Maverick missile, Harpoon missile, Rockeye CBU, Torpedoes, GP bombs, and mines) make it the most responsive and flexible all-weather, day/night capable ISR/RSTA/C4I asset that is

immediately available to the JFC. Three operations serve to illustrate its application to the joint MOOTW effort.

CHAPTER IV: RECENT OPERATIONAL EXAMPLES

Applying the *principles of MOOTW* are critical to enhancing force safety, both military and civilian, and ultimately ensure success.[18] The following examples illustrate how past JFCs have adapted and employed MPA to support their operational needs.

Operation: MARITIME MONITOR (UN Embargo)

A seemingly simple MOOTW such as interdiction of shipping while enforcing a UN embargo can still be fraught with hazards. Putting an *air tight* clamp on shipping into/out of the Former Republic of Yugoslavia (FRY) presented special challenges to the operational commander, Admiral Boorda (then CINCUSNAVEUR and AFSOUTH (under NATO)).

For the CINC/JFC, MPA was the solution for these particular problems. First, to meet the *objective* effectively and *legitimately*, the embargo demanded every ship entering/leaving the Adriatic Sea be challenged, evaluated, and if necessary, boarded or diverted for search. MPA flew continuous, round-the-clock support for this operation for four years. In so doing, they extended the reach of the force and challenged shipping hundreds of miles away, providing the combined force commander (CFC) with the voice/data link reports necessary to efficiently maintain plots/records to track all shipping and *maneuver his limited force* into position to *synchronize* the interception and boarding efforts. The added effect of this action was the reduction of repetitive challenges as vessel captains passed through the force. This eliminated the impression of harassment and, along with an *air tight*

embargo, heightened the *legitimacy* of the operation in the eyes of the international maritime community. Second, force commanders needed a *precision force* option against embargo violators or naval threats. *Security* and *unity of effort* was enhanced by the protection and precise, discriminate force that MPA/P-3Cs with Maverick (IR optically guided) missiles brought to the force. Third, the necessity to position the force along the territorial sea (twelve mile) boundary meant that a short I&W threat from FRY naval forces (diesel submarines and STYX missile equipped patrol boats) was a constant threat to force *security*. To combat the USW threat, MPA was armed with torpedoes and Rockeye cluster bombs (CBU) (the latter to address both surface/periscope depth submarines and surface threats). As MPA was the force's *air arm*, the combined Maverick/Rockeye capability resulted in MPA being assigned as the surface combat air patrol (SUCAP) whenever other requirements precluded the presence of the CV in the Adriatic (which was often). Lastly, from outside territorial limits, the P-3's long-range, standoff EO systems offered the CFC an ability to not only see up to the FRY coastline, but also to verify naval force positions inside the harbors and up to the piers, as well. MPA's flexibility and adaptability allowed it to simultaneously perform three critical missions (ISR/RSTA, USW, SUW) while enhancing the MOOTW(MIO) mission success.

Operation: DENY FLIGHT (Peace Operations)

In Bosnia, the JFC had several MOOTW problems that threatened *objective, force security* and, thereby, *legitimacy* in the no-fly and HA relief effort. Exploiting MPA's unique long endurance, stare capability, onboard analysis, and RT/NRT downlinking capabilities, the JFC directed (beginning in February 1994) daily flights over Bosnia.

In support of the Combined Air Operations Center (CAOC) (DENY FLIGHT), the JFC used MPA's ten-hour plus mission endurance to solve the problems with target (SAM, embedded artillery and troop) locating/verification that weather had frustrated. Daily target packages assigned to MPA were two to three times that of other RSTA platforms. MPA's ability to wait out the weather and peer through holes in the clouds, stare for significant periods of time to search out faction positions in mountainsides and airfields, and provide RT/NRT SATCOM downlink to Vicenza, Italy (where the CAOC was located) were key to the operational execution of this *exclusion zone* mission. MPA was designated the primary battle damage assessment (BDA) platform before, during, and after strikes.

For the UN Ground Force Commander (JOINT ENDEAVOR), MPA helped to optimize his limited force assets by providing *on-demand* RT PIONEER video downlink to the JFC (in Sarajevo) of key faction positions and performed locating, communications assistance, and route *force security* sweeps for UN HA/Relief Mission convoys. Since the Dayton Peace Accord went into effect, MPA has been used in an *Arms Control* capacity to conduct daily verification and imagery transmission of large weapon cantonment sites. Additionally, the crews are used to monitor the *exclusion zones/zones of separation (ZOS)* that were established to separate warring sides. An added benefit of these flights is that the JFC is able to support non-governmental organization (NGO)/private volunteer organization (PVO) areas of concern and provide RT imagery of national infrastructure integrity or trouble spots as the nation rebuilds. This has helped the JFC to enhance civil-military cohesiveness and satisfy some of his media needs.

Operation: ASSURED RESPONSE (Liberian NEO)

When warring factions threatened the safety of Americans and Embassy personnel in Liberia (1996), the nation reacted immediately. The Commander, Special Operations Command, Europe (SOCEUR) was appointed as CJTF to conduct the NEO *extraction phase*. Time and distance did not permit the carrier or amphibious ready group (ARG) to be repositioned (over 2500 nautical miles) from their Mediterranean positions to the area of the troubled Western African nation. To conduct the NEO, the special operations JTF staged from two sites: Sierra Leone (which provided the headquarters and evacuation helo ISB site) and Senegal (which provided the larger (gunship, transport, and tanker) aircraft staging site). SOCEUR requested, and the CINC directed, that the EO MPA aircraft flying in Bosnia be redeployed to support the imagery requirements of this operation. Within twelve hours both aircraft were relocated to Dakar, Senegal and within 24 hours they were providing the JFC (in Sierra Leone) and the U.S. Ambassador (in the Liberian Embassy) with RT/NRT imagery/video from overhead Monrovia. In support of this mission, P-3 (EO/IRDS) crews provided the JFC and the special operations forces (SOF) with RSTA of helicopter landing zones (HLZ), the embassy compound, faction force/armored positions, and detailed sweeps of all streets within the city. This information was used to plan and rehearse the operations and maneuvers. During the actual evacuations, MPA provided video and voice reporting of opposing force positions and movements to the JFC and SOF helos as they approached. Once on the ground at the embassy (HLZ), aircrews provided force security. An unintended benefit to the JFC was the SATCOM communications capability of the platform. MPA

served as the relay between the JFC and the evacuee-laden SOC helicopters, thereby filling a critical communications gap in the operation. At mission's completion, the JTF (J-3) noted that they would not do NEOs again without MPA (EO/IRDS).

CHAPTER V: CONCLUSION

In past war, the line between tactical and operational acts was perhaps more clear. But, in MOOTW, "political considerations permeate"[19] and operational-tactical actions can take on far greater implications of strategic significance. To execute the operational art and achieve battlespace dominance/awareness in MOOTW, the CINC/JFC will someday have a *system of systems*, but that is not available today. For now, he could be on the horns of a dilemma that would leave the JFC wanting for the continuous, intelligence support. Most ISR/RSTA assets are not, or will not, be under the CINC or JFC's direct control. But there is a responsive, off-the-shelf system that can meet the JFC's need. The EO/VIDEO-INT/IRDS equipped MPA/P-3 (and its AIP/CDU variants now in production) is the decisive enabler that solves the dilemma. No other air platform better fills this critical JFC operational level battlespace awareness void. No single ISR/C4I platform puts more sea/land mission versatility in the JFC's hands. The EO equipped MPA/P-3 provides the operational commander with an unmatched and unique capability to view the whole "canvas," visualize operational ideas, master challenges, and, thus, raise *The Art of MOOTW* to its highest form.

For General Ulysses S. Grant, battlefield information was a matter of days; decision and action – a matter of weeks and months. For General Norman Schwartzkopf, information was a matter of minutes; decision and action – a matter of hours. In tomorrow's battlespace, information will be continuous and decision and action will be immediate.... [20]

- General Larry E. Welch, USAF
former Air Force Chief of Staff

APPENDIX A

Military Operations Other than War (MOOTW)

• Arms Control	• Combating Terrorism
• DoD Support to Counterdrug Operations	• Enforcing Exclusion Zones
• Ensuring Freedom of Navigation (FON) and Overflight	• Humanitarian Assistance (HA)
• Military Support to Civil Authorities (MSCA)	• Nation Assistance/Support to Counterinsurgency
• Noncombatant Evacuation Operations (NEO)	• Peace Operations (PO)
• Protection of Shipping	• Recovery Operations
• Show of Force Operations	• Strikes and Raids
• Support to Insurgency	• Enforcement of Sanctions/Maritime Interception Operations (MIO)

Source: Joint Pub 3-07. Joint Doctrine for Military Operations Other Than War. (Washington, D.C.: The Joint Staff, 16 June 1995), III-1.

Principles of MOOTW

- OBJECTIVE
- UNITY OF EFFORT
- SECURITY
- RESTRAINT
- PERSEVERENCE
- LEGITIMACY

APPENDIX B

P-3C Aircraft Capabilities Comparison

"Vanilla" P-3 Aircraft	*AIP Aircraft (ASUW Improvement Program)* (1)	*CDU Aircraft (Counter Drug Upgrade)* (2)
Night: Infrared Detection Set (IRDS)	**Night**: Improved IRDS	**Night**: Improved IRDS
SUW: Harpoon Missile, Rockeye CBU GP Bombs	**SUW**: Same, plus: Maverick Missile with SLAM enhancements	**SUW**: Same as "Vanilla"
USW: MK-46/50 Torpedo	**USW**: Same	**USW**: Same
MIW: CAPTOR/Mines	**MIW**: Same	**MIW**: Same
EO: 2 aircraft in EUCOM AOR are currently configured	**EO**: All are equipped	**EO**: All are capable. Production versions will be equipped
Radar: Inverse Synthetic Aperture Radar (ISAR/APS-137) or Standard (APS-115)	**Radar**: ISAR/SAR	**Radar**: APG-66 (F-16 Radar)
Survivability Mod: some (3)	**Survivability Mod**: all (3)	**Survivability Mod**: all (3)
	Upgraded C3I Suite (1) ◆ OTCIXS ◆ TRE/TRAP/TADIX-B ◆ DAMA Comms	
Comms: SATCOM, 2-HF, 1-VHF, 3-UHF Data Link-11	**Comms**: PIONEER Video downlink, Photo-T, SATCOM, 2-HF, 1-VHF, 3-UHF (4)(5) Data Link-11	**Comms**: Same as AIP
Navigation: GPS (non-integrated) 2-Inertials	**Navigation**: GPS (integrated) 2-Inertials	**Navigation**: Same as AIP

Notes:

(1) The AIP aircraft enhancements generally improve ISR/C4I capabilities.
(2) The CDU aircraft are primarily a Caribbean asset. The enhancements support the ISR/air-intercept mission.
(3) The survivability modifications include the addition of: ALE-39/AAR-47/ALQ-167 threat warning and flare/chaff dispensers, as well as fire suppression foam fuel tank inserts.
(4) PIONEER is a UAV system installed to provide UHF line-of-sight (LOS) live video downlink of EO imagery.
(5) Photo-T is a near-real-time (NRT), annotated still image captured via EO video or digital hand-held camera.

Other factors include:

Speed: Transit - 300 Kts; Onstation: approx. 200 Kts
Avg. Mission Duration: 10-12 hours (6+ hours onstation)
Crew: 11-12 / 20-21 aircraft positions max.
All weather capable
Ceiling: FL350 (35,000 ft MSL)

APPENDIX C

Summary of Asset Strengths, Weaknesses, Critical Vulnerabilities

- *Satellites, SR-71,* and *TR-1* remain closely controlled national, joint or CINC held assets. Their *strength* lies in their ability to lay the strategic ISR IMINT/SIGINT/I&W initial groundwork for a MOOTW, provided time, terrain, weather, and availability are all optimized for their employment. Their *weaknesses* lie in a lack of flexibility, unique support and security requirements, and high cost of operations. They are not designed for long-term support of operational level, MOOTW requirements. They are controlled at the national/joint level.

- *JSTARS strength* is its SAR radar system. It is the right asset for open terrain involving armored/mechanized large army actions. Its *weakness* lies in its SAR limitations when placed in high reflective environments, such as: dense foliation, mountains, and urban areas such as are found in many MOOTW situations. It is a joint controlled asset. Its *critical vulnerability* is a lack of self-defense systems.

- *UAV and TARPS strengths* rest with their potential ability for employment in hostile environments. TARPS aircraft have the ability to defend themselves. *Weaknesses* include: for the UAV, control, communications, and basing concerns. For TARPS, generally not an available asset unless a CV is assigned to the MOOTW. Limited numbers of assets in both cases can be a show stopper. Most UAV technologies are still developmental and are, therefore, not ready for operational employment. Specialized support makes the UAV a costly option. TARPS is still a snap-shot system and is, therefore, limited in what it can provide the JFC. *Critical vulnerabilities* include loss due to ground fire in both cases.

- *VQ/EP-3* and *RP/P-3* are national/JCS controlled assets that meet the needs of the operational commander. Their full-spectrum intelligence capabilities make them a flexible, and proven (in virtually every MOOTW) JFC asset. *VQ strength* lies primarily in its SIGINT/measurement and signature intelligence (MASINT) capabilities. *RP strength* rests on IMINT/VIDEO-INT and survivability modifications to provide missile threat warning and response (chaff/flare). Both assets can be queried in-flight for analysis/clarification. *VQ weakness* lies in its overt profile due to its array of externally mounted antennas and the special security handling of its information. VQ has no survivability enhancements. *Critical vulnerability:* requires a near-benign, air superiority environment.

- *Electro-optical (EO) equipped VP/P-3s* (such as the prototype, AIP, and CDU variants) *strengths* include: standoff RT/NRT imagery that can be obtained from outside many SAM envelopes and above ground fire. RSTA data can be sent to the JFC via LOS (VIDEO-INT) and SATCOM (IMINT). Diverse mission capabilities, weapons capacity, day/night capability (IRDS), and long flight time make it a flexible asset capable of dynamic in-flight retasking. EO aircraft are modified with chaff/flare and threat warning systems to enhance survivability in SAM environments. It is a CINC controlled asset. Its *critical vulnerability* is its lack of self-defense capability and requirement for an air superiority environment.

NOTES

[1] U.S. President. *A National Security Strategy of Egagement and Enlargement.* (Washington, D.C.: The White House, 1996), i.

[2] U.S. President., 3.

[3] Joint Pub 3-07. *Joint Doctrine for Military Operations Other Than War.* (Washington D.C.: The Joint Chiefs of Staff, 16 June 1995), vii.

[4] Samuel P. Huntington. "The Clash of Civilizations?" *Foreign Affairs.* (Summer 1993), 22.

[5] Joint Pub 3-07., I-1.

[6] The Joint Chiefs of Staff. *Joint Vision 2010.* (Washington, D.C.: The Joint Chiefs, n.d.), 21.

[7] Adm. William A. Owens, USN. "The Emerging System of Systems" *U.S. Naval Institute Proceedings* (May 1995): 37.

[8] Owens, 37.

[9] Owens, 37.

[10] Milan Vego. *Operational Functions.* (Newport: U.S. Naval War College, August 1996): 18.

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[12] Joint Pub 2-0. *Joint Doctrine for Intelligence Support to Operations.* (Washington, D.C.: The Joint Staff, 5 May 1995), V-7.

[13] Air Land Sea Application Center Publication: RECCE-J. *Multiservice Procedures for Requesting Reconnaissance Information in a Joint Environment.* (Washington, D.C.: U.S. Government Printing Office, 7 June 1996), 1-4,1-5.

[14] Cdr. Sandra K. Brooks, USN. Interview by Author. U.S. Naval War College, Newport, RI, 12 May 1997.

[15] Brooks. Interview.

[16] Capt. Duane J. Phillips, USN. Interview by Author. U.S. Naval War College, Newport, RI, 9 May 1997.

[17] Phillips. Interview.

[18] Joint Pub 3-07. viii.

[19] Joint Pub 3-07. I-1.

[20] Gen. Larry D. Welch, USAF. "Dominating the Battlefield (Battlespace)." *Journal of Electronic Defense* (January 1997 Supplement): 14.

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